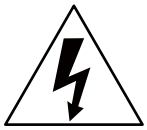
USER MANUAL

HIGH RESOLUTION 700TVL CAMERA

Northern



The lightning flash with an arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

INFORMATION - This equipment has been tested and found to comply with limits for a Class A digital device, pursuant to part 15 of the FCC Rules & CE Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING - Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

CAUTION : To prevent electric shock and risk of fire hazards:
☞Do NOT use power sources other than those specified.
☞Do NOT expose this appliance to rain or moisture.

This installation should be made by a qualified service person and should conform to all local codes.

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General Features

● 700TV Lines

The combination of a 960H CCD image sensor and DSP provides an excellent resolution of 700TV Lines.

● 3D-DNR

Smart 3DNR prevents the image blurring of moving object and activates only if moving objects are appearing on the scene.

● DIS(Digital Image Stabilizer) Function

Makes a stabilizing clearer and the highest picture quality when out of focus by the wind or climate changing.

● Smart-IR

No saturation image, vivid image in darkness! This camera makes very sharp video image in darkness! This technology eliminates saturation of video image of the closer object in darkness by control of the IR sensitivity. Saturation never happens in our cameras, you can enjoy vivid image in any dark condition!

● Sens-Up

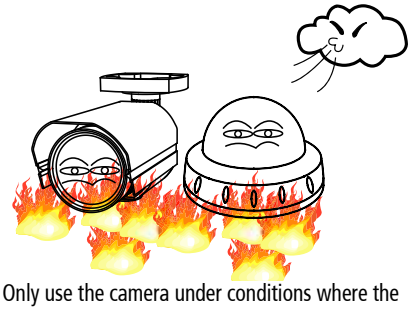
Despite a limited & low light condition, Sens-Up - Max. x256 helps the viewer to get visible and clear images.

● Defog

Defog function improve the clarity of images taken in poor conditions such as fog, smoke, rain or snow.

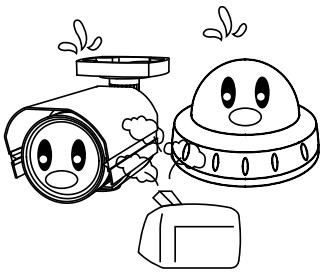
Precautions

Do not install the camera in extreme temperature conditions.



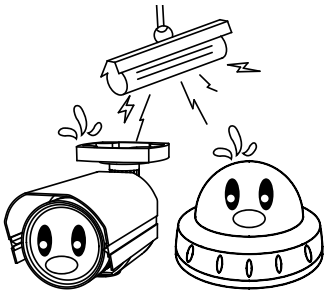
Only use the camera under conditions where the temperatures are between -20°F ~122°F

Do not install or use the camera in an environment where the humidity is high.



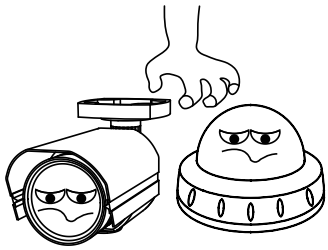
Do not install or use the camera in an environment where the humidity is high.

Do not install the camera under unstable lighting conditions.



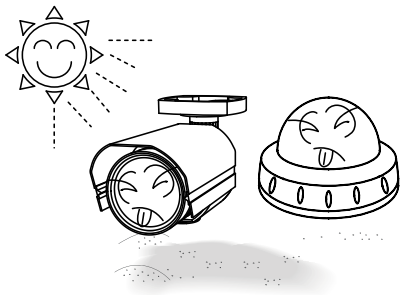
Severe lighting change or flicker can cause the camera to work improperly.

Do not touch the front lens of the camera.



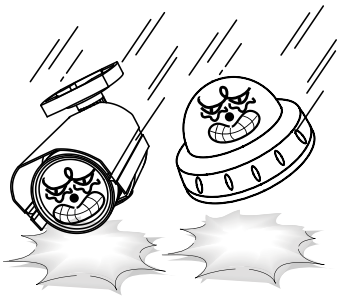
This is one of the most important parts of the camera. Be careful not to leave fingerprints on the lens cover.

Never keep the camera pointed directly at strong light.



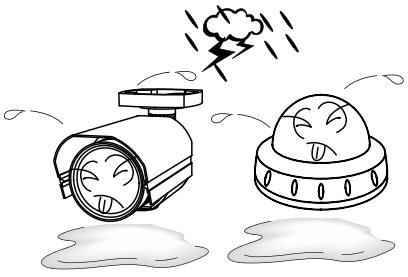
It can cause malfunctions to occur.

Do not drop the camera or subject it to physical shocks.



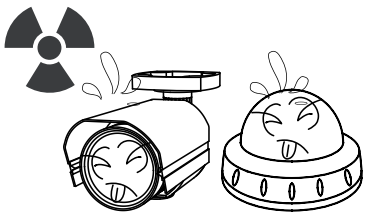
Housing damage can compromise weatherproof ratings.

Do not expose internal components to rain or moisture.



If it gets wet, wipe dry immediately. Liquids can contain minerals that corrode the electronic components.

Do not expose the camera to radioactivity.



If exposed to radioactivity the CCD will fail.

NOTE

* If the camera is exposed to spotlight or object reflecting strong light, smear or blooming may occur.

* please check that the power satisfies the normal specification before connecting the camera.

Safety Instructions

Precautions for use

◑ This camera should be installed by qualified personnel only

◑ There are no user serviceable parts inside

◑ Do not disassemble this camera other than to make initial adjustments

◑ Use appropriate low voltage power cable to prevent fire or electrical shock

◑ Please insure that your installation area can support the weight of the camera

Please handle this camera carefully :

◑ Do not use a strong or abrasive detergent when cleaning the camera

◑ Do not expose the camera to direct sun

◑ Do not install camera in places where humidity is high

◑ Do not install near cooling or heating device

◑ Do not expose camera to rain or moisture

How to Set Up the camera menu

● Setup Menu

SET UP MENU	DEFAULT SET	MENU		
LENS	DC	BRIGHTNESS	0~100 Level Selectable	
		MODE	INDOOR	
			OUTDOOR	
		RETURN	RET	
			SAVE&END	
	VIDEO			
	MANUAL			
EXPOSURE	SHUTTER	x2, x4, x6, x8, x10, x12, x14, x16, x24, x32, x64, x128, x256, AUTO,1/60,1/50, FLK, 1/250, 1/500, 1/1000, 1/2000, 1/5000, 1/10000, 1/20000, 1/50000 1/100000,		
	AGC	OFF		
		LOW		
		MIDDLE		
		HIGH		
	SENSE-UP	AUTO	SENSE-UP(x2 ~ x256 Level Selectable)	
			RETURN	RET
				SAVE&END
		OFF		
	BLC	OFF		
		BLC	VALUE	LOW
				MIDDLE
				HIGH
			AREA	POSITION
				SIZE
				AGAIN
			DEFAULT	
			RETURN	RET
				SAVE&END
		HSBLC	GAIN	0 ~ 8 Level Selectable
			MODE	ALL DAY
				NIGHT ONLY
			DEFAULT	
			RETURN	RET
				SAVE&END
	D-WDR	OFF		
		INDOOR	LOW LEVEL	0 ~ 15 Level Selectable
			HIGH LEVEL	0 ~ 15 Level Selectable
			RETURN	RET
				SAVE&END
		OUTDOOR	LOW LEVEL	0 ~ 15 Level Selectable
			HIGH LEVEL	0 ~ 15 Level Selectable
			RETURN	RET
				SAVE&END
	RETURN	RET		
		SAVE&END		
WHITE BAL	ATW			
	AWB			
	AWC->SET			
	MANUAL	BLUE	0 ~100 Level Selectable	
		RED	0 ~100 Level Selectable	
		RETURN	RET	
			SAVE&END	
DAY/NIGHT	COLOR			
	B/W	BURST	ON/OFF	
		IR SMART	VALUE	0 ~ 100 Level Selectable
			AREA	POSITION
				SIZE
				RET/AGAIN
			OFF	
		IR DWDR	OFF	
			1 ~ 15 Level Selectable	
		RETURN	RET	
			SAVE&END	
	AUTO	DELAY	0 ~15 Level Selectable	
		D --> N (AGC)	0 ~ 255 Level Selectable	
		N --> D (AGC)	0 ~ 255 Level Selectable	
		RETURN	RET	
			SAVE&END	
	EXT	START DELAY	0 ~15 Level Selectable	
		END DELAY	0 ~15 Level Selectable	
		RETURN	RET	
			SAVE&END	

How to Set Up the camera menu

● Setup Menu

3DNR	OFF				
	ON	LEVEL	1 ~ 200 Level Selectable		
		RETURN	RET		
			SAVE&END		
SPECIAL	CAM TITLE	ON			
		OFF			
	D-EFFECT	FREEZE	ON/OFF		
		MIRROR	MIRROR		
			V-FLIP		
			ROTATE		
			OFF		
		D-ZOOM	ON	RANGE	x1 ~ x32 Selectable
				PAN	-100 ~ 100 Selectable
				TILT	-100 ~ 100 Selectable
				RETURN	RET
					SAVE&END
			OFF		
		SMART DZOOM	OFF		
			ON	RANGE	x2 ~ x5 Selectable
				POSITION	LEFT/RIGHT/UP/DOWN
				SENSITIVITY	0 ~ 100 Level Selectable
				TIME	0 ~ 15 Level Selectable
				RETURN	RET
					SAVE&END
		DIS	ON/OFF		
		NEG. IMAGE	ON/OFF		
		RETURN	RET		
			SAVE&END		
	MOTION	ON	AREA	1 ~ 4 Selectable	
			AREA DISPLAY	ON	POSITION
					SIZE
					RET/AGAIN
				OFF	
			VALUE	0 ~ 100 Level Selectable	
			MOTION VIEW	ON/OFF	
			RETURN	RET	
				SAVE&END	
		OFF			
	PRIVACY	ON	AREA	1 ~ 8 Selectable	
			AREA DISPLAY	ON	TOP LEFT
					TOP RIGHT
					BTM LEFT
					BTM RIGHT
					POSITION
					RET/AGAIN
				OFF	
			COLOR	1 ~ 15 Selectable	
			TRANSPAR	0 ~ 3 Selectable	
			RETURN	RET	
				SAVE&END	
		OFF			
	DEFECT	SENSEUP	x4 ~ x128 Level Selectabl		
		DIFF	0 ~ 3 Level Selectable		
		THRESHOLD	0 ~ 4 Level Selectable		
		START			
		RETURN	RET		
			SAVE&END		
	DEFOG	OFF			
		MANUAL	LEVEL	0 ~ 31 Level Selectable	
			COLOR GAIN	0 ~ 10 Level Selectable	
			EDGE GAIN	0 ~ 10 Level Selectable	
			GAMMA	USER, 0.05 ~ 1.00 Level Selectable	
			RETURN	RET	
				SAVE&END	
		AUTO	DETECT LEVE	0 ~ 5 Level Selectable	
			RETURN	RET	
				SAVE&END	
	RETURN	RET			
		END			

How to Set Up the camera menu

● Setup Menu

ADJUST	SHARPNESS	0 ~ 31 Level Selectable		
	MONITOR	LCD	GAMMA	USER, 0.05 ~ 1.00 Level Selectable
			LEVEL	0 ~ 63 Level Selectable
			BLUE GAIN	0 ~ 255 Level Selectable
			RED GAIN	0 ~ 255 Level Selectable
			RETURN	RET
				SAVE&END
		CRT	LEVEL	0 ~ 63 Level Selectable
			BLUE GAIN	0 ~ 255 Level Selectable
			RED GAIN	0 ~ 255 Level Selectable
			RETURN	RET
				SAVE&END
		USER	GAMMA	USER, 0.05 ~ 1.00 Level Selectable
			LEVEL	0 ~ 63 Level Selectable
			BLUE GAIN	0 ~ 255 Level Selectable
			RED GAIN	0 ~ 255 Level Selectable
			RETURN	RET
				SAVE&END
RESET	FACTORY	RESET		
	RETURN	RET		
		SAVE&END		
EXIT				

Menu Set Up

Menu setting can be selected by the button inside the camera.

1. Press the set button.

* The Set Up menu will be displayed on the monitor.

2. Move and select the required function using the Up and Down button.

* Move the triangular indicator Up or Down to select the desired feature by pressing the Up or Down button.

3. Change menu settings using the Left or Right button.

* Available values or Status are displayed by pressing the Left or Right buttons.
  Press the button until desired value / status is displayed.

4. After Changing the setting move the arrow indicator to EXIT and press the
   SET button to EXIT.

NOTE

* Move to the available submenu by moving ↵ arrow to desired feature.
* Submenu is not available when this symbol displayed "---".

Lens

This function is to adjust the brightness of the monitor.

1. Move the triangular indicator to LENS using the Up and Down buttons on the Set Up menu screen.
2. Select the desired lens type by pressing the Left of Right button.

NOTE

* When DC is selected, the brightness control range is 1~100.

* When you select the mode setup, you can select INDOOR or OUTDOOR depending on the installation environment.

Exposure

1. On the Set Up menu, Select EXPOSURE by using the Up or Down button.

2. Select the desired shutter mode by pressing the Left or Right button.

◆ Electronic Shutter : DC lens is launched with the setting of 1/60 and the manual lens is launched with the setting of Auto shutter, but the shutter speed can be adjusted from 1/60 to 1/100,000.

→ DIS (Digital Image Stabilizer) : Select the DIS mode when a shaken image appeared due to the discrepancy of frequency with ambient light condition near the installation spot. Sense Up mode is not worked in the setting of the DIS mode.

◆ AGC (Auto Gain Control) : The higher the AGC level is, the more noises appear.

→ Off : Deactivated.
→ Low : 28dB Gain is applied.
→ Mid : 32dB Gain is applied.
→ High : 36dB Gain is applied.

NOTE

* Sense-Up mode is not worked when Electronic shutter is selected as Manual or DIS.

◆ Sense-Up : The bright screen can be displayed by sensing the degree of the darkness automatically under the circumstance of low light condition or at night.

→ Off : Deactivated status.
→ Auto : Sense-Up auto mode status, The brightness degree is decided by the Sense Up setting value in the low light condition.

NOTE

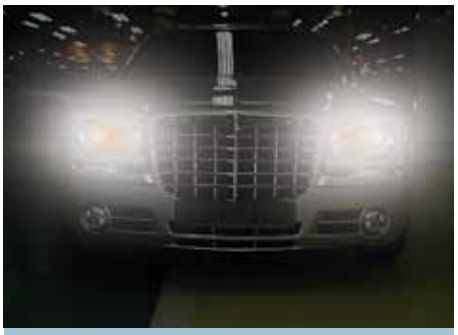
* Sense Up mode is not worked in the off status of AGC mode.

◆ BLC (Back Light Compensation) : The camera with 3D-DNR provides the intelligent light level control to overcome strong backlight conditions.

→ Off : Deactivated status.

→ BLC : The set up area can be seen vividly by the user who set up the desired area to compensate the back light directly according to the installation environment.

→ HSBLC (Highlight Suppression Back Light Compensation) : When there is a car head light turned on at the entrance of the gas station or in some place in the parking lot, the numbers of the car plate can be recognized by blocking only the light from the car headlight. At the area is set up specifically, you can recognize the car plate numbers by blocking the strong light signal.



Nomarl

HSBLC

◆ D-WDR : This camera which is using 3D-DNR DSP provides intelligent light level control to overcome even strong backlight conditions.

→ Off : Deactivated status.

→ Indoor compensation : To be used when the camera is installed in the indoor circumstances.

→ Outdoor compensation : To be used when the camera is installed in the outdoor circumstances.

WDR OFF

WDR ON

◆ Return : Every function is set up at the EXPOSURE menu, and then return the previous menu.

White Balance

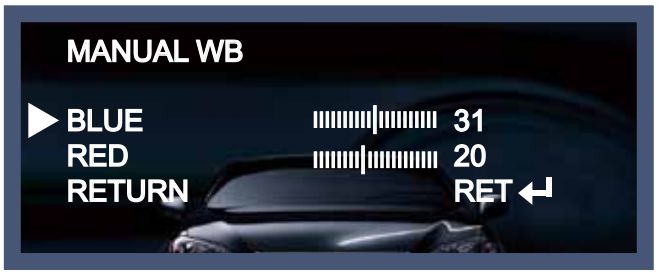
Use this function when the color adjustment of a screen is needed.

1. Move the triangular indicator to WHITE BAL on the SETUP menu screen using the Up and Down button.

2. Select the desired mode by using the left or Right button.

Use the appropriate mode according to your purposes among these three modes.

- ATW : Use this mode when the color temperature is from 1,800K to 10,500K.
- AWB : The function to search for the color which is matched well with the ambient environment. This be used when the color temperature is from 3,000K to 7,000K.
- AWC→SET : After letting camera focus on the blank white paper to the best condition of current lighting environment, press the SET button. If the lighting condition is changed, Re-adjustment should be needed.
- MANUAL : Manual compensation make the more detailed control possible. First, after adjusting the white balance using the ATW or AWB mode, change the mode into the manual compensation mode and then press Set button. While looking at the color change of the subject seen on the screen after setting up the proper color temperature, increase the each value of the blue and the red.



NOTE

The White Balance may not be worked properly in the following conditions. If this doesn't work, use the AWB mode.

* When there is a very high color temperature in the circumstances of the subject. (for example, clear sky, Sunset)
* It is very dark.
* If the camera is headed to the fluorescent light directly or if there is a drastic lighting change, The operation of White balance may become unstable.

Day&Night

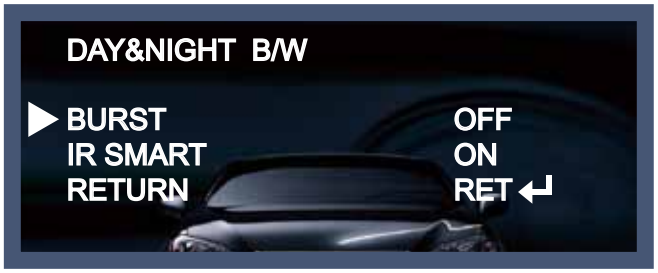
You can change the color mode of color or black / white by setting up the mode.

1. Select Day&Night using the Up or Down button on the Set Up menu screen.

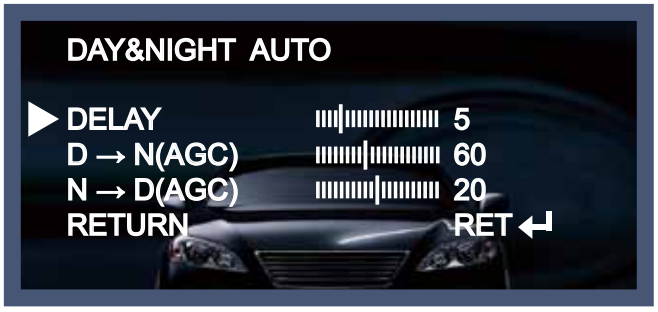
2. Select the desired mode using the Left or Right buttons.

◆ COLOR : Making the video output color always.

◆ B / W : Making the video output B/W always. By selecting the color signal On or Off, this lets the burst signal be disappeared or not.



◆ Auto : Automatically, It shifts into the color mode in the bright environment and the B/W mode in the low light condition. It can adjust the delay time, starting brightness and end brightness according to the ambient conditions by pressing the Set button.

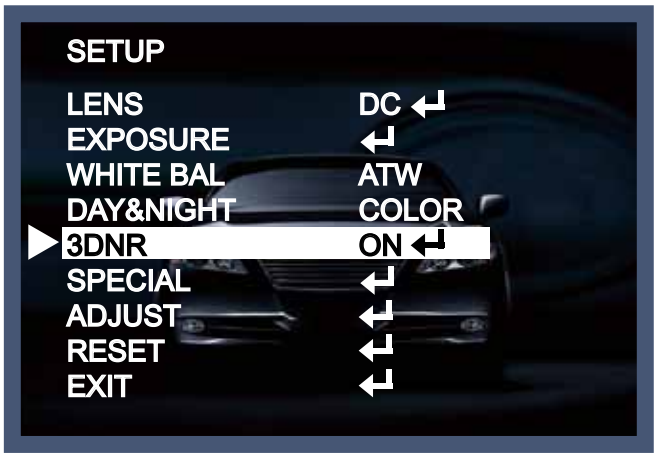


◆ EXT : It can change the color or B/W mode automatically through the connection with the ground terminal.

3DNR

This function makes the noise of the low light background decrease and is the most highlighted feature using 3D-DNR DSP chip.

1. Move the triangular indicator to 3DNR by using the Up or Down button.
2. Select the mode to use by pressing the Right or Left button.



3. Adjust the most available proportion of compensation with the ambient environment by changing the 3DNR mode into On and pressing the Set button.

◆ Off : Deactivated status.

◆ On : The compensation proportion is from 0 to 200.

The excellent effect of noise decrease in the low light condition.

NOTE

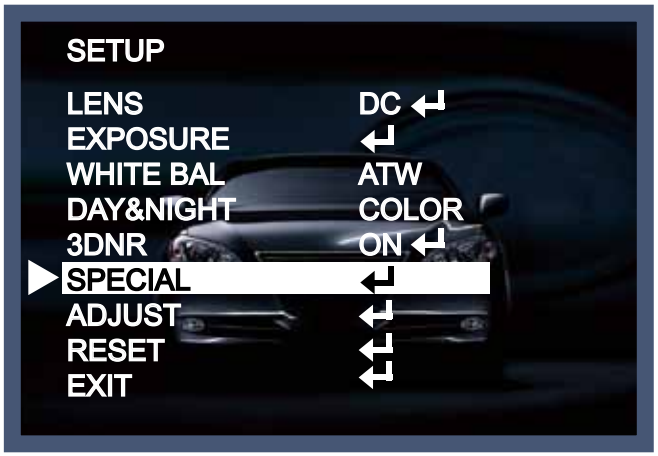
* If 3DNR function is used, the cancellation effect of noise is excellent. The higher the compensation proportion raise, the better the effect of noise cancellation is, but the ghost effect may be occurred.

Special

This can be used when you want to select the additional function control.

1.When the SETUP menu is displayed, select SPECIAL using the Up and Down button.

2. Select one of the mode using the Up and Down button.

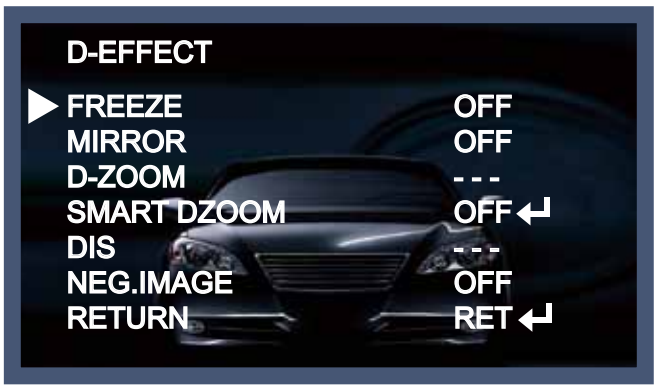


◆ CAM (Camera) TITLE : It can be adjusted when you get into the Cam Title menu. This function is to display the letters of the camera on the monitor. The 15 camera titles can be displayed and the location of the camera title on the screen can be adjusted. Move the triangular indicator to CAMERA ID using the Up and Down button on the Setup menu and then Set to On using the Left or Right button. After the letters you want to display on the monitor set up, press set button on the "END" and complete the set up.

NOTE

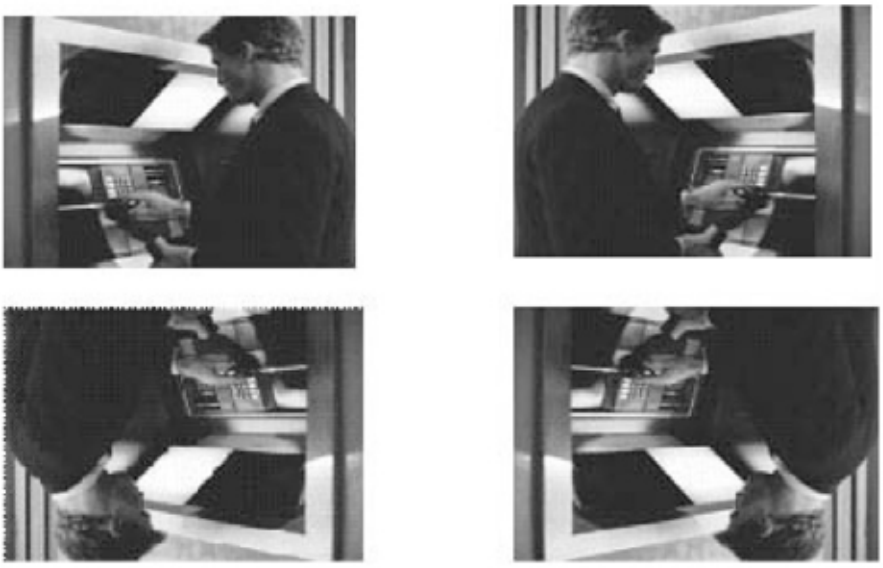
* If you want to erase the letter, move the cursor on the empty space in front of the number 0, and then letters will be erased by pressing the Set button one by one. If move the cursor on the "CLR", press the Set button and you will find all the letters erased.

◆ D-EFFECT : The camera is always given the video image effect by this function.



→ FREEZE : The image of the monitor is paused temporarily by this function.

→ MIRROR : The image of the monitor is reversed vertically or horizontally.



→ D-Zoom : You can use the digital zoom with x1 ~ x32 magnification.
The higher the digital zoom magnification is, the lower the resolution is.

NOTE

* When you use the digital zoom, SMART DZOOM and DIS cannot be used.

→ SMART DZOOM : This function is interlocked with Digital-Zoom to distinguish a specific object in more detail when there is a movement detected in a certain area. An extra sensitivity function is used to detect motions. This function works more effectively with the optical zoom

→ DIS (Digital Image Stabilizer) : DIS offers to compensate the ghost effect of an image and gives a clear image in a low light condition.

DIS OFF

DIS ON

→ NEG. IMAGE

- On : Activate a negative image just like a film.
- Off : Normal image.

→ Return : Save the digital zoom setting, then return to the SPECIAL menu.

◆ MOTION : This can detect the movement of a subject and you can see the moving image of the subject on the monitor when the camera detects it. In the state of Motion Detection On, a new submenu below appears when you press the Set button.

- Area : Youcan designate areas up to a maximum of 4.
- AREA DISPLAY : After the selection of an area, the area screen should be activated On to use the motion detection function in a designated area. When this is activated, you can select the location of area, a size of area coverage.
- VALUE (Sensitivity) : The higher the setting value is, the higher the sensitivity gets, even though the movement of a subject.
- Motion View : If the camera detects a motion, the sentence like "Motion Detection" appears on the monitor.
- Return : Save the setting value of this menu, return to the SPECIAL menu.

◆ PRIVACY : This is used to hide certain areas on the monitor. You can designate each different 8 area. The size of a designated area can be adjusted. The color of a privacy area can be selected 15colors. When you select the return, the setting values in this function menu are saved, then get out of this menu.

◆ DEFECT : You can eliminate white spots (defect) up to max.512 points.

- Sense Up : To eliminate defect, set the high level of Sense Up. You can set to max. 64x, but 32x is the best setting value to eliminate defect.
- DIFF : You can set the size of DEFECT from 0 to 3.
- THRESHOLD
- START : Press Set button on the "< " mark, It will start to eliminate defects "PROCESSING NOW…" sentence will be displayed on the monitor.
- Return : Save the setting value of this menu, return to the SPECIAL menu.

◆ DEFOG : This function helps to recognize the object in a foggy or dusty weather condition.

DEFOG OFF

DEFOG ON

◆ Return : Save the setting value and get out of the current menu.

Adjust

This function is needed to control the brightness of the monitor.

1. When the Set UP menu is displayed, select ADJUST using the Up and Down button.

2. Select the desired mode by using Up or Down button.

◆ Sharpness : The outline of an image becomes sharp and more distinct as the level of sharpness increases. It had better be used to adjust the value to the proper one according to the kind of an image.

◆ Monitor : Change the setting value which is suitable for the monitor.

→ LCD : Select this when you use the LCD monitor.
(You can adjust the Gamma, Level, Blue& Red Gain on the submenu)

→ CRT : Select this when you use the CRT monitor.
(You can adjust the Level, Blue & Red Gain on the submenu)

→ USER : Use this unless you adjust two values above. If you use the monitor which don't have a good contrast rate, get into the submenu and adjust the Gamma, Level, Blue & Red Gain in the submenu.

Reset

The camera is set to the Factory Default value.

Exit

Press the Set button in the exit menu to save the current settings and exit the Set Up menu.

Trouble Shooting

PROBLEM	POSSIBLE CAUSE
Nothing appears on the screen.	☞Check the power cable, power supply output and video connection between the camera and monitor.
The image on the screen is dim.	☞Are the camera lens or the lens glass dirty? Clean the lens / glass with a soft clean cloth. ☞Adjust the monitor controls, as required. ☞If the camera is facing a very strong light, change the camera position. ☞Adjust the lens focus.
The image on the screen is dark.	☞Adjust the contrast control of the monitor. ☞If there is an intermediate device, correctly set the 75Ω/Hi-z.
The camera is not working properly and the surface of the camera is hot.	☞Check the camera is correctly connected to an appropriate regulated power source.
Motion Detection is not activated.	☞Has MOTION DET been set to ON in the menu? ☞Has MD AREA been properly defined?
The color of the picture is not correct.	☞Check the settings in WHITE BALANCE menu.
The image on the screen flickers.	☞Make sure that the camera isn't facing direct sunlight or fluorescent lighting. If necessary,change the camera position.
The SENS-UP does not work.	☞Check that the AGC setting in the EXPOSURE menu is't set to OFF. ☞Check the EXPOSURE menu and make sure SHUTTER is set to------.

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